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NOV 16 1961

DIVISION 55

RESUME OF RECENT REPORTS ON:

RESUSCITATION FROM VENTRICULAR FIBRILLATION

IN THE CLOSED CHEST

OUTSIDE THE OPERATING ROOM

By O. Dallons, Ph.D.

There is mounting evidence that closed chest cardiac resuscitation in acute myocardial infarction (1) and acute coronary occlusion, complicated by ventricular fibrillation, is being encouraged in clinical practice as a routine therapy. Many case reports have been published in several of the best-known cardiological journals. Ventricular fibrillation is a frequent complication during the twenty-four hours after acute cardiac accidents and invariably results in death.

To be successful, treatment of this emergency depends entirely on prerequisites which make a preconceived plan absolutely mandatory. These prerequisites are:

(1) The four or five minute time limit must not be violated or there will occur serious damage to the central nervous system.

(2) Prompt recognition of the emergency by the signs of unconsciousness, cessation of arterial pulsations, apnea, respiratory gasps and convulsions; but these indications do not distinguish ventricular fibrillation from ventricular standstill.

(3) Since time is of the essence, a preconceived plan must include instrumentation capable of detecting signs of impending disaster to overcome the inertia always present in this emergency. To save time at this point may well be the difference between life and death. Success is dependent on starting resuscitative measures without procrastination. Prompt restitution of effective coronary and cerebral circulation after the onset of ventricular fibrillation in clinical situations depends on:

(a) The Cardioscope. All critical cardiac patients should be constantly monitored with a Cardioscope (Dallons CS-3-5A). First comes the diagnosis. What kind of arrhythmia? .....Ventricular standstill or ventricular fibrillation?....."When was the onset?" is the big question. There should be no guesswork in establishing the

(3) (a) Continued:

exact time of the onset. Observation of cessation or resumption of arrhythmias, or resumption of normal sinus rhythm?.....Are resuscitative measure effective?.....What course of action must be taken?.....Is the patient responding?.....Is this a potentially salvageable case?

With adequate instrumentation there is no frustration. Electrocardioscopy is still the most valuable single aid used in clinical cardiology today for low cost, accurate and constant observation and interpretation of heart action. To run for the direct writer electrocardiograph.....call for the technician.....attach the electrodes..... and wade through bushels of paper AFTER the onset of such an emergency, is a waste of precious minutes which can mean the difference between success or failure of resuscitative efforts. For survival to be possible, coronary and cerebral circulation must be started as early as possible after the onset of ventricular fibrillation (four minute time limit).

(b) The External/Internal Cardiac Defibrillator. An External/Internal Cardiac Defibrillator (Dallons CD-XI) must be immediately available as well as oxygen, airway and vasopressor drugs. The re-establishment of the oxygen system must not be neglected. Immediate institution of closed chest cardiac massage (2) and standard therapy (oxygen, vasopressor and anti-arrhythmic drugs) must be continued as long as necessary. Defibrillation of the anoxic heart may result in an ineffective heart beat or none at all. Hence the importance of constant electrocardioscopic observation becomes apparent. Both the cardiac compression and artificial respiration are essential parts of the resuscitative procedure. One or two shocks applied to the closed chest (450V to 750V for adults with durations of .1, .5 or 1 second, depending on how effective the oxygenation of the myocardium is) will defibrillate the heart and restore a sinus rhythm with hemodynamic significance.

The evolutionary changes of the electrocardiograms continuously observed on the electrocardioscope during and after the procedure is of paramount importance.

References -

(1) F. Joseph Thal, M.D., F.A.C.C., Maria E. Cerny,M.D., Donald J. Conlon,M.D., Marvin A. Yussman,M.D. and Robert H. Irwin,M.D., San Francisco, California: The American Journal of Cardiology, May 1961.

(2) Kouwenhoven, W.B., Jude, M.R. and Knickerbocker, G.G., "Closed Chest Cardiac Massage," The American Journal of Cardiology, May 1961.

See the following reprints enclosed:

1. "Resuscitation from Ventricular Fibrillation Complicating Acute Coronary Occlusion (From the Medical Service of the 7520th U.S. Air Force Hospital, South Ruislip, England), Report of a Case," by Ellis L. Rolett, M.D., Boston, Massachusetts.*

Reprints enclosed (continued):

2. "Closed Chest Cardiac Resuscitation in Acute Myocardial Infarction (From the Department of Medicine, Permanente Medical Group, and Kaiser Foundation Hospital, San Francisco, California," by Joseph Thal, M.D., F.A.C.C., Maria E. Cerny, M.D., Donald J. Conlon, M.D., Marvin A. Yussman, M.D. and Robert H. Irwin, M.D., San Francisco, California.*

3. "Cardiac Resuscitation after Documented Myocardial Infarction, Case Report of a 'Successful Failure' (From the Department of Medicine & Surgery, U. S. Army Hospital, Fort Jackson, South Carolina)," by David J. Turell, M.D. and Maj. Elias A. Husni, M.C., U.S.A., Fort Jackson, South Carolina.*

* - All above reprints were taken from the American Journal of Cardiology, May 1961 issue.

DALLONS

EXTERNAL-INTERNAL CARDIAC DEFIBRILLATOR

MODEL CD-XI

SPECIFICATIONS

Input:	110-115 Volts, 50-60 Cycles, A.C.
Output:	External - 150, 250, 350, 450, 550, 650, 750 V, 60 C/Sec. (Green Color Code).
	Internal - 60, 85, 110, 140, 170, 200, 250 V, 60 C/Sec. (Red color Code).
Power:	External - Maximum 2,500 Watts.
	Internal - Maximum 600 Watts.
Pulse Duration:	.1 sec., .5 sec., 1 sec., manual. Controlled electronically.
On-Off Switch:	Incorporated in circuit breaker for added protection.
Outlet for:	Explosion proof foot switch (available on request at additional cost).

PHYSICAL DESCRIPTION

Size:	Width - 15-3/4" Depth - 8-1/2" Height - 12".
Weight:	35 lbs., completely packed w/accessories.
Color:	Dallons metallic green case, gray face panel with burgundy and green markings.
Construction:	Modern Dallons styling with accessory drawer. The Defibrillator is compact for easy portability. All metal construction.

Ventricular fibrillation may occur at any time during surgery. When this emergency occurs it is necessary to stop the "fatal rhythm" before normal pace of the heart can be re-established.

The output of the CD-XI Cardiac Defibrillator for INTERNAL use is variable from 60 to 250 volts with steps at 60, 85, 110, 140, 170, 200 and 250 volts. The voltage from 60 to 85 may safely be used on the heart of a child, while the higher voltages may be selected to defibrillate the largest adult heart INTERNALLY.

The output for EXTERNAL use is variable from 150 to 750 volts, with steps at 150, 250, 350, 450, 550, 650 and 750 volts. This unit has been purposely over-designed for EXTERNAL application to withstand the high current surges which develop, depending on the size of the chest and the resistance across the large external paddles.

The CD-XI is equipped with two sizes of paddles, the large set for external use and the smaller set for internal use. A selector switch is available for internal or external application. AS A SAFETY FACTOR, THE OUTPUT PLUGS FOR THE INTERNAL AND EXTERNAL CONNECTING CORDS ARE OF DIFFERENT SIZE SO THAT IT IS IMPOSSIBLE TO PLUG THEM INTO THE WRONG OUTPUT JACKS.

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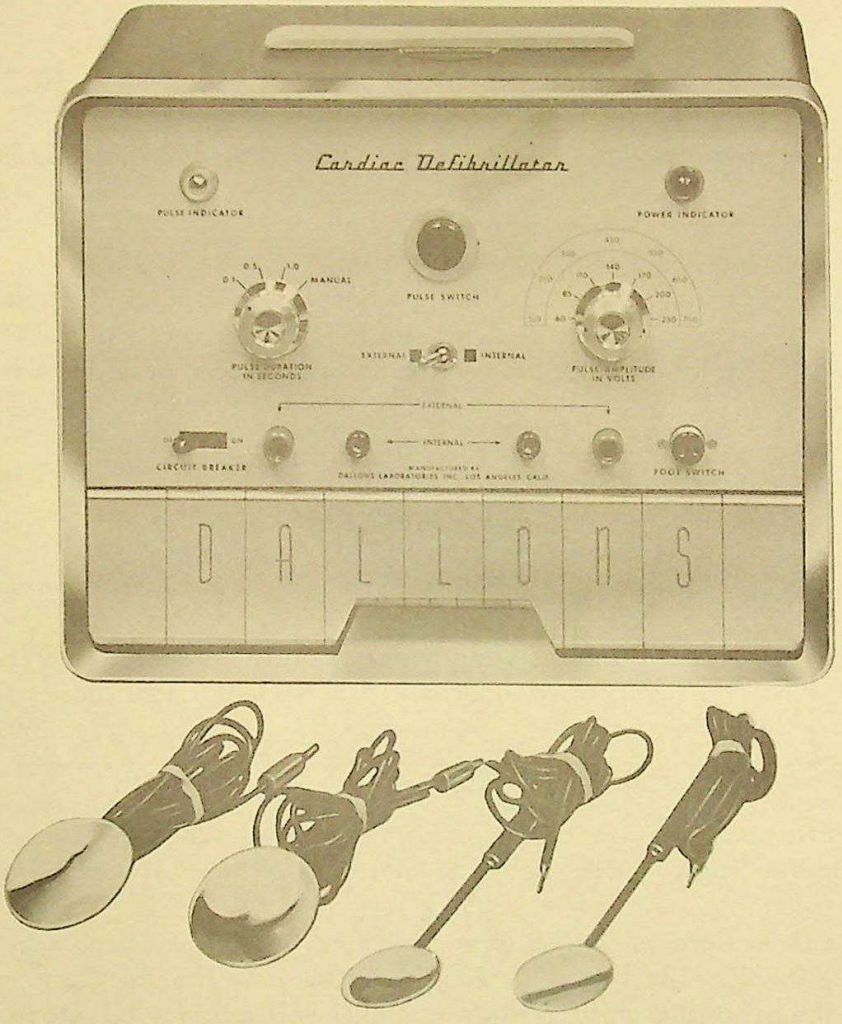
THE DALLONS CD-XI CARDIAC DEFIBRILLATOR

for

EXTERNAL OR INTERNAL CARDIAC DEFIBRILLATION



EMERGENCY CARDIAC RESUSCITATION

The CD-XI Cardiac Defibrillator is engineered specifically to meet the emergency of ventricular fibrillation by the electric shock therapy method.

TREAT THE HEART INTERNALLY OR EXTERNALLY

INSIST ON

DALLONS ADVANCED ENGINEERING AND STYLING